

## Everyday Utilitarianism: Who Gets the TV First?

I've often thought it would be fun to write a book on "everyday utilitarianism" — how to apply mathematical formalizations of utilitarianism and game theory to help you solve everyday life dilemmas, like who should get to use the television first or whether you should go out with that guy.

The basic idea would be that each chapter would revolve around a particular mathematical principle and demonstrate it using a concrete example from everyday life. Since I'll probably never get around to writing such a book, I figured I'd just write up such examples on my blog when I encountered them and maybe someone else would take the idea and run with it.

So here's the first example:

It's 8pm, and you settle down in front of the television to watch *American Idol*. Unfortunately, at the very same time your roommate is also settling down in front of the television to play one of his video games. Quickly, the two of you get into a tiff about who will get to use the television first. You both would prefer using the television first rather than second, yet, since *American Idol* is a live show, watching it now is a rather different experience from watching it later, while the video game will remain the same all night. How can you prove mathematically to your roommate that you should get to use the television first?

Let  $U(TV_0 = A)$ , which we'll write  $AT_0$ , represent the number of *utils* (essentially, a measure of enjoyment) you get from watching the TV first, while  $BT_0$  represents the number of utils your roommate gets from watching the TV first. ( $AT_1$  and  $BT_1$  represent the utils from watching it second.) Obviously our goal is to maximize the total number of utils (i.e. enjoyment) in the world, by picking the solution that leads to our greatest number.

First we write down what we know. Obviously you both would prefer to watch the show first, rather than second:

$$AT_0 > AT_1$$

$$BT_0 > BT_1$$

But since *American Idol* is live, we can also say that the benefit you get from watching it first is bigger than the benefit your roommate gets from playing his game first. In other words:

$$AT_0 - AT_1 > BT_0 - BT_1$$

Finally, we want to find out which is bigger: you going first and him second, or you going second and him first. Let  $><$  represent "which is bigger?"

$$AT_0 + BT_1 >< AT_1 + BT_0$$

Now, to solve, we take what we know:

$$AT_0 - AT_1 > BT_0 - BT_1$$

And we add  $AT_1$  to both sides:

$$AT_0 > BT_0 - BT_1 + AT_1$$

And then add  $BT_1$  to both sides:

$$AT_0 + BT_1 > BT_0 + AT_1$$

Which precisely answers the question above: it's better for you to go first.

By this time in the proof, however, your roommate should have wandered off, leaving you to watch *American Idol* in peace. Unfortunately, not having seen your proof, he thinks you're just a selfish ass as opposed to trying hard to do what's best for the whole world.

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